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Paradrymonia peltatifolia (Gesneriaceae), a Recently Discovered Species from Panama

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ABSTRACT. A recently discovered species is described from the Cobre mine site managed by Minera Panamá S.A. in Colón Province (Donoso District) in central Panama near the Caribbean coast. The new species, *Paradrymonia peltatifolia* J. L. Clark & M. M. Mora (Gesneriaceae, Episcieae), is easily distinguished from congeners by the presence of peltate leaf blades, which is a vegetative characteristic that is rare in the Gesneriaceae.

RESUMEN. Se describe una especie recientemente descubierta en la concesión Cobre Panamá manejada por la Minera Panamá S.A. en la provincia de Colón (distrito de Donoso) en el centro de Panamá cerca de la costa Caribe. La nueva especie, *Paradrymonia peltatifolia* J. L. Clark & M. M. Mora (Gesneriaceae, Episcieae), se distingue fácilmente de congéneres por la presencia de láminas peltadas, la cual es una característica vegetativa rara en las Gesneriáceas.

Key words: Gesneriaceae, IUCN Red List, Panama, *Paradrymonia*.

Ongoing efforts to document and monitor plant biodiversity in the Colón Province of Panama have resulted in the discovery of numerous new species. These efforts have been promoted through collaborations between Minera Panamá S.A. (MPSA) and the Missouri Botanical Garden and are aimed at mitigating impacts of a large copper mining concession. Here we describe a species that was discovered as a result of this collaboration. The new species, *Paradrymonia peltatifolia* J. L. Clark & M. M. Mora, is a terrestrial herb in the flowering plant family Gesneriaceae. The current circumscription of *Paradrymonia* Hanst. includes 38 species (Mora et al., 2012) and is the main focus of a Ph.D. dissertation (M. Mora, in prep.).

Paradrymonia peltatifolia J. L. Clark & M. M. Mora, sp. nov. TYPE: Panama. Colón: Distr. Donoso, helipad ZP-P9, 8°51'5"N, 80°40'19"W, 391 m, 20 July 2011 (fl.), J. L. Clark & L. Martinez 12550 (holotype, US; isotypes, E, K, MO, NY, PMA, SCZ, SEL, UNA). Figure 1.

Diagnosis. Differs from all congeners by the presence of peltate leaf blades.

Terrestrial herb with erect to creeping stems; stems subwoody, subquadrate, sulcate, elongate with shoots to 30 cm long, each shoot with leaves apically clustered, light tan to rose-colored, hirsute; internodes longer than broad, 3–6.5 cm long near base, more clustered at apex; adventitious roots present, pinkish. Leaves opposite, unequal in a pair, the larger leaf in a pair with petioles (5–)13–40 cm, cross-section U-shaped, wine-red, densely hirsute; the blade (9–)16–21 × 7–16 cm, peltate with petiole attached 2–5 cm above margin of the leaf blade, ovate to orbiculate with dentate and ciliate margins, apex long-acuminate, base rounded, dark green and glabrescent to puberulous above, light green or purplish and hirsute along veins below; the lateral pairs of veins 5 or 6, departing midvein at a 50°–60° angle, tertiary veins distinct, reticulate; the smaller leaf strongly reduced, to 1 cm long, ovate to lanceolate, with serrate margins. Inflorescence a reduced pair-flowered cyme with 2 to 4 flowers that appear in axillary clusters, the prophylls oblong with ciliate margins, less than 10 × 1 mm, reddish green; the pedicels 1–4 cm long, rose-colored, hirsute. Flowers with calyx lobes subequal, 1.5–2 × 0.5–1.1 cm, ovate to lanceolate, hirsute, pale green to rose, serrate; corolla posture oblique relative to the calyx, ca. 3.5–4.5 cm long, trumpet-shaped, spurred at base for 5 mm, white to white suffused with pink, red streaks present in throat, sparsely sericeous, inside throat covered with glandular trichomes on upper surface, lobes 5, entire, subequal, ca. 10 × 10 mm, glabrous within; androecium with 4 stamens, included, didynamous, the filaments adnate for ca. 3 mm to the base of corolla tube, to 3 cm, white, glabrous, each anther apically coherent to its homologous pair, each anther 2 × 1 mm, the thecae dehiscent by longitudinal slits; gynoecium with the ovary ovoid, 4–4.5 mm, densely sericeous with long reddish trichomes, style ca. 2.1 cm, with sparsely distributed pubescence, stigma capitate, disc of a single bilobed gland on dorsal surface, ca. 2.3 mm long,

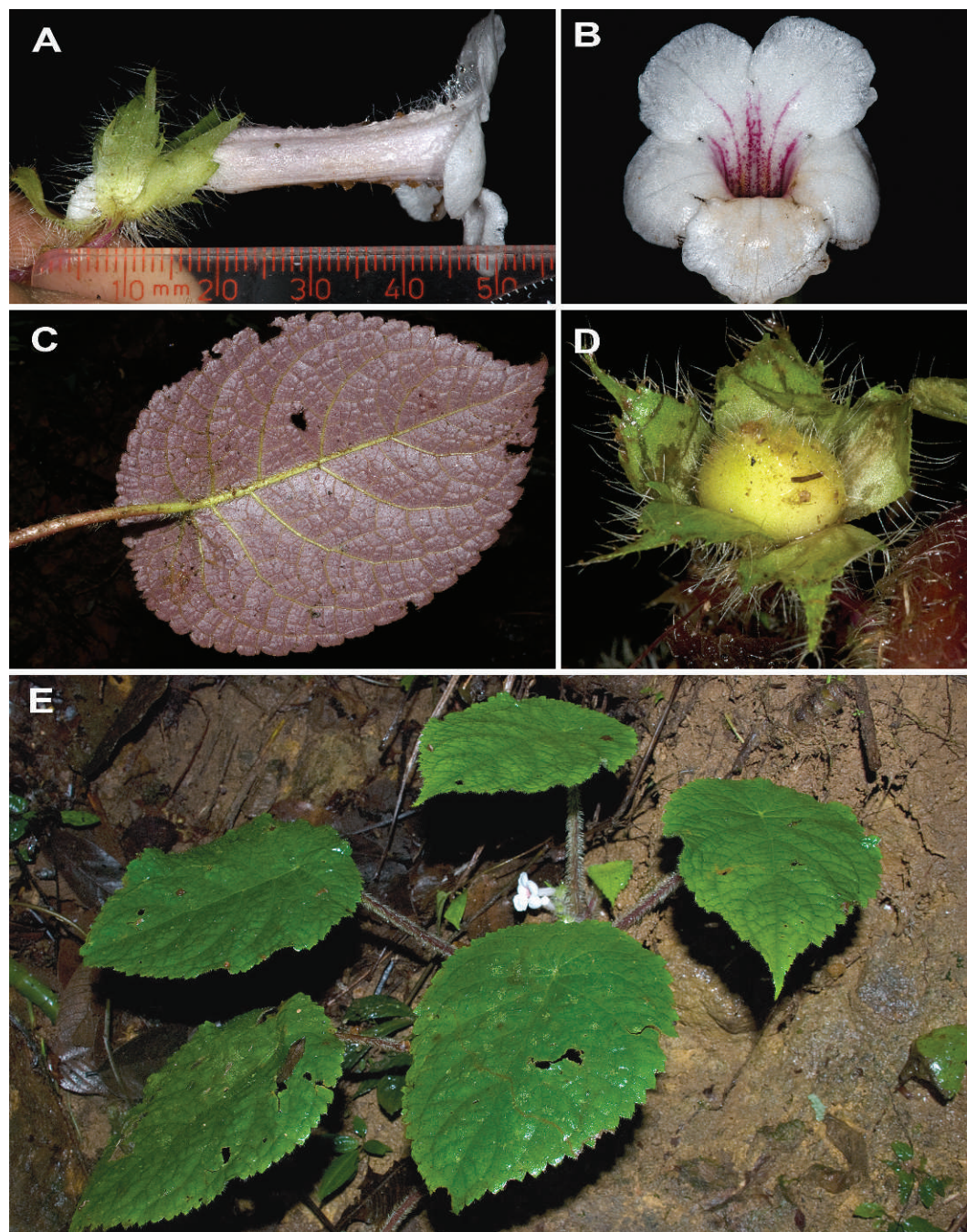


Figure 1. *Paradrymonia peltatifolia* J. L. Clark & M. M. Mora. —A. Lateral view of flower. —B. Front view of corolla. —C. Abaxial leaf surface showing peltate blade. —D. Immature fruit. —E. Habit showing clusters of leaves with peltate blades. Images of field collections in A, B, and E are from J. L. Clark & L. Martinez 12550 (holotype, US), C from J. L. Clark & L. Martinez 12578 (US), and D from J. L. Clark & J. De Gracia 12450 (US).

entire, glabrous. Fruit a greenish yellow, bivalved, semi-fleshy (not succulent) capsule appearing laterally compressed; seed fusiform, striate, black, 5×3 mm, embedded in a fleshy funicle.

Distribution and habitat. *Paradrymonia peltatifolia* is endemic to Panama and is known only from the type locality in Colón Province. The lowland vegetation (i.e., below 500 m) of the Caribbean slope

where *P. peltatifolia* thrives is classified as Tropical Wet Forest (Holdridge, 1978).

IUCN Red List category. The only known populations of *Paradrymonia peltatifolia* are located inside a region that will be developed for a copper mine by MPSA. Population sizes of 10 to 15 individuals clustered along muddy streams were observed by the first author in two different localities. Six days of fieldwork during the summer of 2011 resulted in documenting one population near MPSA's Colina camp and a second population near helipad ZP-P9 (J. L. Clark & L. Martinez 12578). There are no known populations outside the copper mine concession, and therefore significant efforts are being implemented by MPSA to cultivate and transplant *P. peltatifolia*. These conservation efforts are ongoing for *P. peltatifolia* and other species as a way to mitigate the impacts to biodiversity when the mine is implemented. According to the IUCN Red List criteria (IUCN, 2001) for limited geographic range (B2a, less than 10 km² and known to exist at only a single location) and considering the uncertain future of the region, *P. peltatifolia* should be listed in the category CR (Critically Endangered).

Phenology. *Paradrymonia peltatifolia* has been collected in flower in March and July and in fruit in July.

Etymology. The specific epithet is derived from the Latin *pelta*, meaning shield; it refers to the petiole attachment near the center of the blade (Fig. 1C) instead of the more common attachment near the margin. A peltate leaf attachment is often associated with orbicular blades that appear shield-shaped.

Discussion. *Paradrymonia peltatifolia* is distinguished from its congeners by the presence of peltate leaves, in contrast to the more ubiquitous character state of blades that are attached at their basal margin to the petiole. *Paradrymonia peltatifolia* is the only known species of *Paradrymonia* with peltate leaves. This unusual vegetative character is uncommon in the New World members of Gesneriaceae. It is also known to occur in *Drymonia peltata* (Oliv.) H. E. Moore, which is an endemic species of the very humid forests of the central Pacific slopes of Costa Rica. Another New World gesneriad, endemic to Colombia and with seemingly peltate leaves, is *Nautilocalyx peltatus* (C. V. Morton) Wiehler. Morton (1945) noted in the description that the petiole is attached 3–7 mm above the margin of the leaf blade.

However, the holotype and isotypes (*R. D. Metcalf & J. Cuatrecasas 30098*) of *N. peltatus* do not appear to have peltate leaves, despite the specific epithet and details provided in the description by Morton. Other species with peltate leaves include *Sinningia tuberosa* (Mart.) H. E. Moore from Brazil, *Metapetrocosmea peltata* (Merr. & Chun) W. T. Wang from China, and *Cyrtandra peltata* Jack from Sumatra.

Additional characters that differentiate *Paradrymonia peltatifolia* from its congeners are ovate to orbicular leaf blades (vs. elongate to broadly oblong) with dentate margins and white tubular corollas suffused with pink (vs. uniformly white, yellow, or red).

Paratypes. PANAMA. **Colón:** Distr. Donoso, Conseción de Minera Panamá S.A., Quebrada Colina, sendero to Sinaí, 300–400 m from camp. Colina, 8°50'9.4"N, 80°39'46.6"W, 200–220 m, 15 July 2011 (fl., fr.), J. L. Clark & J. De Gracia 12450 (MO, PMA, SCZ, SEL, UNA, US); Distr. Donoso, Consec. Minera Panamá S.A., helipad ZP-P9, 8°51'5"N, 80°40'19"W, 391 m, 20 July 2011 (fl.), J. L. Clark & L. Martinez 12578 (MO, PMA, SEL, UNA, US); Teck Cominco Mining Concession, Camp Colina, forests along Quebrada Colina, 8°49'50"N, 80°39'30"W, 152 m, 2 Mar. 2008 (fl.), M. Merello & J. I. Gonzalez 3172 (MO).

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